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from Witherspoon, through Stanhope Smith and Samuel Miller, to Beasley, and including Nisbet, Law, and Ogilvie, is the subject of Book V., which completes the volume. Including, as the author does, only the beginning of the nineteenth century, a good part of the literature of realism had to be omitted. This doubtless accounts for the comparative brevity with which the movement is presented.

Most readers will probably be surprised at the size of a volume which devotes itself exclusively to the early period. It is explained by the fact that we have before us the history of philosophical opinions rather than of philosophies; there was plenty of intellectual curiosity and no lack of speculation; and Dr. Riley has included whatever seems to throw light on the development of thought along philosophic lines. The fact that half the volume is devoted to deism and materialism might also be misleading at first. Deism was not primarily a philosophical movement and materialism was not general; but deism did, of course, have very important philosophical bearings, and the various representatives of materialism varied so much in their views and their ways of presenting them that the full treatment of them is justifiable. It is difficult, however, to clear the author of the charge of having cast his net perhaps over-widely in his search for deists and deism. All this, however, points to the merit of thoroughness. He will let no one escape. Dr. Riley has not deprived candidates for the doctorate of all opportunities for original work in the field; perhaps he has only multiplied them, but he has certainly worked the field very thoroughly himself. He has unearthed a quantity of new literature and he has produced a most excellent history. He can not expect entire agreement on minor points, but the verdict must be that he has done an exceedingly careful, thorough, and valuable piece of work.

ADAM LEROY JONES.

PRINCETON UNIVERSITY.

La fonction du sommeil. E. CLAPARÈDE. *Rivista di Scienza,* Vol. II., No. 3, 1907. Pp. 20.

In this article Claparède gives a brief account of his recently published theory of sleep and enumerates his criticisms of other theories. Previous theories may be classified into (*a*) circulatory, (*b*) neurodynamic, and (*c*) chemical, and the author takes up for consideration different theories in each of these general classes.

The circulatory theories are of two kinds: (1) those which explain the occurrence as due to cerebral anemia, and (2) those which report the occurrence of cerebral hyperemia. There are four types of the neurodynamic theory: (1) sleep is due to an interruption or decrease in the conductivity of the neurones; (2) it is not only due to a decrease in the conductivity, but there is a retraction of the nerve elements so that the different neurones are more widely separated than during the waking life; (3) there is in sleep an inhibition of the cerebral, and consequently of the intellectual, activity; and (4) sleep is due to the lack of excitation. The fourth type of this group is closely allied to the first. The chemical hypotheses that have been advanced to explain the conditions of sleep are very varied. The principal ones of this class are: (1) that it is due to a periodic asphyxia of the cerebral substance, (2) that it is due to a decrease in the amount of food material or oxygen, (3) that there is an intoxication of the central nervous system by a periodic accumulation of waste products in the blood, and (4) that it is due to the specific action of a glandular (internal) secretion such as that from the hypophesis cerebri.

The author believes that none of these theories accounts for the condition, they do not explain it as a function, do not say whether it is active or passive and do not answer the "Why?". The circulatory and neurodynamic theories, in addition to having questionable bases of facts, do not show that the phenomena invoked to explain the condition are the cause rather than the effect. The chemical theories rest on the sophism, the author states, that when certain substances are introduced into the blood they produce sleep; it is true that they produce *a* sleep, but it is not certain that they produce *normal* sleep. These theories do not account for the cycle of waking and sleeping, nor do they explain in what manner and why sleep restores the organism. If weariness were the cause of sleep, sleep should always follow exertion and fatigue, but this is not the case. One can sleep without being weary and, on the other hand, one may be considerably wearied without being able to sleep, and at times there may be real insomnia. The influence of obscurity in producing sleep is not explained by any of the theories of the three groups mentioned above. The curve of the depth of sleep, determined by a number of investigators, is taken by Claparède as an indication that the sleep is not due to the action of some toxin or to the lack of food or oxygen, but is explained as having the character of the curve of work and fatigue. To the author the curve means that something is being tired, as if from use; "it is as if sleep were an activity which decreases little by little and that waking occurs after one is fatigued by sleeping"; which criticism and suggestion appear to the reviewer not only a wild guessing, but even mere word juggling. None of the theories accounts for the lack of sleep in some insane and none explains the morbid sleepiness in some hysterical states.

After clearing the ground the author begins to construct his own theory, which is called biological. He presents certain questions that appear to him should be answered by a good theory of sleep, and his answers constitute the biological theory which he has been developing during the past three or four years.

Is sleep an accident or a function? Nearly all the other theories consider sleep to be an accident, as a something that follows a condition of toxemia or asphyxia or as a cessation of activity, and at times as something almost abnormal. According to Claparède, however, sleep is not only the consequence or the reverse of waking, but is useful as such to the organism and is, therefore, a function. As sleep precedes exhaustion it prevents the latter, and thus is to be considered a function of defense of the body.

Is this function passive or active? In answering this question the author compares sleep with the process of micturition, in which the expulsion of urine is not due to the opening of the sphincter because of the great pressure in the bladder, but is brought about long before the tone of the sphincter is overcome by the hydrostatic pressure. In a similar way, he says, sleep begins before the blood is charged with toxic substances sufficient to produce the condition. This function is, therefore, an active one, a biological instinct which has for its end that of arresting the functional activity of part of the body, not that the body may recover from the effects of intoxication, but that the body may not become intoxicated or poisoned.

What, then, is the mechanism of this reflex? Sleep can be produced by feelings of fatigue, by darkness, by lying down, by the sight of the place where one is accustomed to sleep, by the idea of sleep, etc., and it is probable that for normal sleep the action of these stimuli is increased by a certain amount of fatigue, and perhaps by a certain amount of blood change in the nature of poison or lack of food or oxygen. Whether or not there are certain cerebral areas or special nervous centers most involved in sleep, we do not know. Psychologically, sleep is a condition of disinterest for the presented situation or, in other words, it is a condition of total distraction. In sleep there is not an adaptation to what is going on, and "sleep consists in an inhibition of the reactivity." It is not sensibility that is enfeebled, but the ability to react. In sleep the inertia, the suppression of muscular work, prevents the too great use of bodily material and the production of deleterious products; but sleep is not solely a period of restoration after the diminishing muscular or bodily ability, for it is well known that repose—bodily immobility—does not restore as does sleep. The great restorative action of sleep is explained as due to a supposed reservation of energy (ordinarily used in nervous functions) for the needs of restoration, reassimilation, and nutrition of the organism.

This is the biological explanation of sleep. Sleep is not only a negative condition, it is not only for the purpose of getting rid of waste products, but is an active condition that enables the body to continue its work. In this sense the author is probably right. The explanation of the recuperative power of sleep is more than doubtful, for at present we know nothing of energy use by the cerebrum, and the explanation of transfer of cerebral energy to other, the vegetative, organs is nothing more than a guess. To the reviewer it appears probable that too much emphasis is placed on the value of sleep to the vegetative systems, and although one of the mistakes of the other hypotheses is the too exclusive consideration of the nervous system, it is likely that the greatest influence of sleep is on the nerve centers. The incessant activity of the nervous system during waking is followed by a period of comparative quiet during sleep, whereas we know that certain other systems of the body function just as well during the period of sleep. When we are awake the nervous system is used for the regulation and the activating of all the bodily mechanisms, and the vegetative systems, so far as we are aware,

are not so incessantly working. It is the nervous system that needs most rest, but it does not need all. In this connection, it would be interesting to compare in different kinds of animals the amount of sleep with the nervous development, and to determine any relation between the development and use of the higher nerve centers. Because of his artificial conditions of life man would need to be excluded from such a comparison or the lives of some of the domestic animals might be made to approach that of man. We also need more observations, such as were made by Patrick and Gilbert, on the amount of sleep needed for recovery after long periods of waking.

The biological theory of Claparède is an advance on the ones which he has criticized. The new theory will be elaborated and possibly changed to some extent, but even in its present condition it helps more than the older ones to a better understanding of the varied phenomena known as sleep.

SHEPHERD IVORY FRANZ.

GOVERNMENT HOSPITAL FOR THE INSANE,
WASHINGTON, D. C.

Das ästhetische Symbol. ROBERT M. WERNAER. *Zeitschrift für Philosophie und philosophische Kritik,* Band 130, Heft 1. April, 1907. Pp. 31.

The writer opens this interesting paper with the statement that an exhaustive treatment of the symbol is an *Ästhetik im Kleinen.* While expressly disavowing the writing of such an esthetic, he has nevertheless given us a suggestive glance into that new *Gefühls-ästhetik* which is rapidly breaking away from the older intellectualistic presuppositions. The symbol has always been the strong point of intellectualistic esthetics, for, despite the fact that we actually use the term symbolism to cover numerous *felt* meanings which can not be reduced to terms of the understanding, it is in general, as Wernaer says, only the artist and the artistically schooled that are conscious of any other than the intellectual symbol. Some of these felt meanings Wernaer has been able to isolate, and has made good his claim for the existence of a purely "esthetic symbol which is brought into being through feeling, and in which picture and affective content fuse into an unanalyzable unity." Thus in Millet's "Angelus," which is his chief illustration, we have, in addition to the picture for sense and the primary meaning which arises through the "feeling into" the picture of particular emotions, subjective and individual, *another* felt meaning, more objective and typical, "a meaning incorporated in the picture itself, and yet one which lies back of the particular experiences, and which is felt only as *Stimmung*—that this man and this woman express the relation of laboring humanity to God." In this case the secondary meaning is what we describe as religious, but it is only accidentally so. Symbolic art expresses many of the more general feelings which arise in the progress of the race.

With well-chosen illustrations from literature and art, he shows that